

Appln. No. 09/367,832
Amendment dated Dec. 27, 2004
Reply to Office Action of Aug. 26, 2004
Docket No. 6169-251

IBM Docket No. BOC9-2001-0016

REMARKS/ARGUMENTS

These remarks are made in response to the Office Action of August 26, 2004 (Office Action). This response is filed with a petition for a one-month extension of time and with an appropriate fee.

Claims 1-5 and 8-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,725,197 to Wuppermann, *et al.* (Wuppermann) in view of U.S. Patent No. 6,490,563 to Hon, *et al.* (Hon). (Office Action, p. 2.) Claims 7 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wuppermann in view of Hon and further in view of U.S. Patent No. 5,706,399 to Bareis (Bareis). (Office Action, p. 4.) Claims 6, 14, and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wuppermann in view of Hon and in further view of applicants' admitted prior art. (Office Action, p. 4.)

Applicants have amended independent Claims 1 and 8 to further clarify their invention. Dependent Claims 2 and 9 have also been amended. Claims 3, 4, 10, and 11 have been cancelled. The amendments are fully supported in the specification. (See, e.g., Applicants' Specification, p. 3, lines 17-24; p 4., lines 4-24; and p. 9, line 29 through p. 10, line 17.) No new matter has been added by virtue of the amendments.

I. Applicants' Invention

Before addressing the art cited by the Examiner, it may be helpful to briefly review certain features of Applicants' invention. A voice spelling method according to one embodiment, as defined in independent Claim 1, as amended, includes receiving a plurality of audio signals representative of spoken characters in an audio-only interface. The plurality of spoken characters specifies a string. The method further includes denoting a disputed character in the specified string based upon an audible feedback through the audio-only interface. The method also includes responsive to determining a

Appln. No. 09/367,832
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Docket No. 6169-251

IBM Docket No. BOC9-2001-0016

disputed character, querying a database of empirically determined replacement characters for a suitable replacement character for said disputed character. (Applicants' Specification, p. 3, lines 17-24; p 4. lines 4-24; and p. 9, line 29 through p. 10, line 17.)

II. Cited References

Wuppermann is directed to a method of automatic recognition of at least partially spelled speech utterances. (Col. 1, lines 57-60.) A spelled speech utterance is handled with Wuppermann by determining a first recognition result and, based on the result, sending letters to a user to acknowledge or reject. Wuppermann determines successive letters using an adapted linguistic speech model that is adapted as each new letter is acknowledged by the user to be correct. (Col. 1, line 60 through Col. 2, line 17; Col. 4, lines 13-55.) The procedure uses what is termed "successive feedback." (Col. 2, line 20.)

For example, a user may be supplied with an initial letter or letters, and after the user acknowledges the correctness of that letter or letters, a finite state network (FSN) grammar is extended for recognizing a succeeding letter. (See Col. 4, lines 13- 55; FIG. 2.) The FSN grammar, more particularly, is adapted by changes to the nodes and edges that define the network grammar. (Col. 4, line 55 through Col. 5, line 37.)

By contrast, Hon is directed to a computer-implemented system and method for proofreading text in a computer system. Hon converts a selected portion of text to speech or audio-based content that can played to a user in a semi-continuous manner. (Col. 5, line 53 through Col. 6, line 5.) The audio-based content provides feedback so that a user can detect errors in the text without looking at a visual display of a computer terminal or screen.

Bareis is not concerned with either voice-spelling or proofreading textual content, but is instead directed to a voice-based control system for a vehicle alarm. Bareis converts speech input into time-variant voltage levels that are amplified and then

Appln. No. 09/367,832
Amendment dated Dec. 27, 2004
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Docket No. 6169-251

IBM Docket No. BOC9-2001-0016

digitized with analog-to-digital converter to provide control signals for locking and unlocking a vehicle door, controlling the lights, and for controlling other features of a vehicle using a voice input.

III. Analysis

Applicants respectfully submit that the references singly and jointly fail to teach or suggest each of the features of Applicants' invention. For example, none of the references teach or suggest querying a database of empirically determined replacement characters for affecting a voice spelling with audio-only interface, as recited in each of independent Claims 1 and 8, as amended.

Wuppermann, as already noted, provides a user with an initial set of one or more recognized letters based upon a first recognition result, and the user either acknowledges or rejects the correctness of the letter or letters. (Col. 4, lines 28-31.) Based on the letter or letters selected, Wuppermann queries a database for a subsequent presentation of letters that are then presented to the user. (Wuppermann, Col. 5, lines 11-64.)

Applicants respectfully submit, though, that it would be a mischaracterization to say that this aspect of Wuppermann teaches querying a database of empirically determined replacement characters for a suitable replacement character, as recited in each of independent Claims 1 and 8, as amended. Nor does Wuppermann teach suggesting a replacement character based upon the query.

Wuppermann does not query an empirically determined database for a suitable replacement character. Wuppermann queries a database for a new set of letters to present after a preceding presentation of letter or letters has been acknowledged as correct. This is explicit in Wuppermann where it is stated that "[a]fter the user has acknowledged the correctness of this recognition result, this result is used for adapting the network grammar." (Col. 5, lines 13-15; see, also, Col. 4, lines 41-45.) But the adapting precedes

Appln. No. 09/367,832
Amendment dated Dec. 27, 2004
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Docket No. 6169-251

IBM Docket No. BOC9-2001-0016

the query of a database. The database query does not pertain to a query for a suitable replacement character, but rather a query for the next set of letters to present after, as a result of a preceding acknowledgement of correctness, the network grammar has been adapted to reflect the preceding acknowledgment of correctness of the letters: "For the second letter to be recognized, a query of the database [element 7] provides as a possible recognition result one of the letters A to I or one of the letters K to P or one of the letters R to U." Col. 5, lines 19-22.)

A complete reading of Wuppermann thus demonstrates that a database is queried in Wuppermann only for a subsequent set of letters to present after a preceding set has been acknowledged by the user to be correct and, as a result, the finite state grammar has been adapted accordingly. This, however, is starkly different from querying a database in order to find an alternative character to substitute for a misrecognized one, as taught by Applicants' invention. Misrecognition of a letter with Wuppermann requires a new analysis and new presentation based upon a predefined target of words. But this is not tantamount to nor does it suggest querying a database for a replacement or alternative as with Applicants' invention.

This distinction between Wuppermann and Applicants' invention is even more stark when one examines the nature of the respective databases of each. As already described, the database queried by Wuppermann is a database of targeted words from which the finite state grammar is created. Thus, the Wuppermann database is not a database of empirically-based replacement or alternative characters is queried in Applicants' invention. The disparate nature of the Wuppermann database dictates a limitation not inherent with Applicants'. The database used by Wuppermann limits the words that the system can spell, for example. A user, with Wuppermann's database can only spell words that are in its special grammar.

Appln. No. 09/367,832
Amendment dated Dec. 27, 2004
Reply to Office Action of Aug. 26, 2004
Docket No. 6169-251

IBM Docket No. BOC9-2001-0016

By contrast, as will be readily appreciated by those of ordinary skill in the art, an empirical database such as Applicants' can be built from the results of, for example, an empirical test of acoustic confusability. Such a database is distinct from a confusion matrix. Instead of a confusion matrix, the empirically-based database of Applicants' invention can be a table derived from a confusion matrix. Applicants' empirically-based database does not limit the words that can be spelled, in contrast to Wuppermann. A user of Applicants' database can spell virtually any combination of letters and numbers without limitation.

Accordingly, Wuppermann fails to teach or suggest querying a database for an alternative or replacement character as expressly recited in each of independent Claims 1 and 8. Neither Hon nor Bareis make up for the lack in Wuppermann regarding this aspect of Applicants' invention.

CONCLUSION

Applicants respectfully maintain that, in as much as Wuppermann, Hon, and Bareis fail singly and jointly to teach or suggest each of the features recited in independent Claims 1 and 8, as amended, the prior art does not provide a basis for rejecting either of the independent claims. Moreover, given that each of the dependent claims recite additional features to those of the independent claims from which they depend, the prior art likewise fails to provide a basis for rejecting the dependent claims. Accordingly, Applicants respectfully request that the rejection of the claims be withdrawn.

Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the

Appln. No. 09/367,832
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IBM Docket No. BOC9-2001-0016

Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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